MEMO Number TSR04
DATE: 2023-02-11
TO: Dr. LaBerge
FROM: UHDRTZ
SUBJECT: Progress report for early 2023

1 INTRODUCTION

This memo provides the progress report required by Capstone. This report covers January 30 to February 11.

2 COMPLETED WORK

We discussed changing the codebase from C/C++ to Rust. To find out if this is a viable option, we experimented with some proof of concept-type tests, with some level of success. Working components so far include getting a video feed from the camera, handling the image using a game engine for Rust, and rotating the image.

We purchased a power supply for the Arduino. This power source plugs into the wall and will replace the unsightly pile of D batteries that came with the existing system.

The provided camera had some issues with its sensor, and there are dark spots all over the image. Therefore, we submitted a purchase request for a new camera. The new camera comes with an enclosure, so it will be better protected from damage in the future.

The team investigated the Effects Box and found that it did not work. We are planning to do image processing in software instead, with a graphical user interface to manipulate the image in a similar fashion. We have a proof of concept that implementing the Effects Box functionality is possible in Rust, but do not have it working in conjunction with the rest of the project as of this moment.

The team has continued investigating possible ways to implement the haptic feedback system. Challenges have been identified with 3D printing and modeling as the team has little to no experience in this area.

3 WORK EXPECTED DURING NEXT PERIOD

The team will continue writing code with the tentative goal of switching over from C/C++ to Rust.

We will also investigate connecting the DC motor and rotary encoder so the crank system will feature the physical sensation of turning the motor with the accuracy of the rotary encoder.

Initial prototypes of the haptic feedback system will be developed for testing.

4 ISSUES FROM PREVIOUS REPORTS

The team has abandoned two features of the project related to its Linux environment: running on boot and remote troubleshooting via ssh. We are having some difficulties with understanding 3D printing and modeling.